



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA ST., N.W.
 ATLANTA, GEORGIA 30323

Report Nos.: 50-400/88-23

Licensee: Carolina Power and Light Company
 P. O. Box 1551
 Ralleigh, NC 27602

Docket No.: 50-400

License No.: NPF-63

Facility Name: Harris 1

Inspection Conducted: July 25-29, 1988

Inspector: J. Zeiler for H.L.W. 9/6/88
 H. L. Whitener Date Signed

Accompanying Personnel: J. Zeiler

Approved by: Frank Jape 9/6/88
 F. Jape, Chief Date Signed
 Test Programs Section
 Engineering Branch
 Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was in the areas of local leak rate testing and verification of containment integrity.

Results: In the areas inspected, violations or deviations were not identified.

Within the scope of this inspection, the findings indicated that the licensee has developed and implemented a program of controls, procedures, and testing as required by Technical Specifications to maintain containment integrity. Also, appropriate containment related systems were available and adequate procedures were implemented to mitigate releases in the event of a loss of containment integrity following a LOCA. However, two weaknesses were identified; one concerning the licensee's procedure for performing the personnel airlock door seal leakage test, and, one weakness involving mathematical and data transposition errors in calculating the total containment local leakage rate (Paragraphs 3.0 and 4.c.).

The above conclusions are based on limited available plant data, since the plant has not undergone its first refueling outage during which time more extensive testing and maintenance activities are expected. A more conclusive review of the licensee's implementation of containment related programs will be conducted in subsequent inspections when more plant data is available.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- S. Bohanon, Shift Technical Advisor
- G. Forehand, Director, QA/QC
- P. Hadel, Project Specialist, Maintenance Planning
- *C. S. Hinnant, Plant General Manager
- *E. Johnson, Principle Specialist, Document Services
- *L. March, Engineering Technician, Technical Support
- *M. M. Pugh, Project Specialist, ISI
- *C. E. Rose, Jr., QA Supervisor
- *J. Schaub, Senior Specialist, Technical Support
- *D. L. Tibbits, Director, Regulatory Compliance
- *M. G. Wallace, Senior Specialist, Regulatory Compliance
- *L. Woods, Engineering Supervisor, Technical Support

Other licensee employees contacted during this inspection included engineers, operators, and administrative personnel.

NRC Resident Inspectors

- *W. H. Bradford, Senior Resident Inspector
- *G. F. Maxwell, Senior Resident Inspector (Joseph M. Farley)

*Attended exit interview

2. Purpose

The purpose of this inspection was to verify the development and implementation of programs, controls, procedures, and test activities which ensure that containment integrity is established, monitored, and maintained consistent with the requirements of the Technical Specifications, Appendix J of the 10 CFR 50, and applicable industry standards.

3. Local Leak Rate Testing (61720)

An important part of monitoring and maintaining containment integrity is the periodic testing performed to verify the leak tightness of containment leakage barriers. As part of the evaluation of containment integrity, the inspector reviewed the formal procedures established by the licensee to verify local leak tightness of leakage barriers. Documents reviewed either totally or in part to verify that the licensee has established adequate procedures and controls included:

PLP-103, Revision 3, Surveillance and Periodic Test Program

PLP-106, Revision 1, Technical Specification Equipment Test Program
 MMM-012, Revision 6, Maintenance Work Control Procedure
 MMM-019, Revision 0, Post-Maintenance Testing
 AP-007, Revision 6, Temporary and Advance Changes to Plant Procedures
 RMP-006, Revision 1, Records Storage Area
 ISI-203, Revision 5, ASME Section XI Pump and Valve Program Plan
 ISI-114, Revision 0, General Use of Local Leak Rate Testing Equipment
 ISI-112, Revision 0; Type B and C LLRT Engineering Personnel Training
 and Qualification
 EST-212, Revision 2, Type C Local Leak Rate Tests
 EST-209, Revision 3, Type B Local Leak Rate Tests
 EST-219, Revision 3, Personnel Air Lock Door Seals Local Leak Rate Test
 EST-220, Revision 0, Type C LLRT of Containment Purge Exhaust Penetration
 (M-58)
 EST-221, Revision 0, Type C LLRT of Containment Purge Make-Up Penetration
 (M-57)
 EST-222, Revision 0, Procedure for the Type B LLRT of the Personnel Air
 Lock Barrel (Overall Test)

Portions of the above documents were reviewed in general for assignment of
 responsibility, adequate instructions, control of test activity,
 appropriate test intervals, appropriate test parameters, approved test
 methods and adequate acceptance criteria. Also a detailed walk through of
 the procedures for local leak testing was performed for ten penetrations
 shown below:

<u>Penetration</u>	<u>Description</u>
M-78B	Pressurizer Liquid Sample Line
M-40	Demin. Water to PRT
M-44	Fuel Pool Cooling System
M-86B	Hydrogen Analyzer
M-76A	Accumulator Fill Line
M-12	Excess Letdown Line
M-39	CCW from RCP Thermal Barriers
M-73A	Hydrogen Analyzer Sample Suction
M-77A	Nitrogen to SIS Accumulator
M-8	Normal Charging



Partial review of other penetrations was also performed and no problems were identified relative to valve identification, valve alignment or system restoration.

Based on this review of a sample of the leak rate test procedures and portions of the administrative control procedures the inspector concluded that programmatically the licensee has developed a containment local leak rate measurement program which is consistent with the regulatory requirements of the Technical Specification, Section 4.6; 10 CFR 50, Appendix J; and ANSI-N45.4-1972.

Implementation of the program for establishing and maintaining containment leak tight barriers was also reviewed. This review included a limited amount of data since the plant has not had a refueling outage and consequently, has not yet performed a periodic Type B and C test program. Review of available test data and leak rate summations showed that the licensee has established and implemented the controls for maintaining the total Type B and C leak rate summation and has routinely performed the quarterly Type C test of the purge valves. The inspector reviewed the leak rate summations for a limited number of Type B and C tests performed during a short outage in October 1987 and found that the summation was incorrect. Further review showed that some minor mathematical and data transposition errors had resulted in a small error in total leakage. These errors were corrected before the inspector left the site and the actual leak rate was well below the allowable leakage limit. At the exit interview licensee management stated that a non-conformance report (NCR) had been written on this item requiring that the root cause be identified and corrective action taken prior to implementing the first periodic Type B and C test program. The inspector considered that the NCR will track and resolve this issue.

The inspector reviewed the Surveillance and Work Request and Authorization (WR&A) controls to ensure that a method of tracking a failed leak rate test through the maintenance, retest and review process is defined. Task sheets are computer generated and issued for each initial Type B and C test. These sheets have a unique number identifying a specific component and specify the schedule, the test to be performed and the test procedure. If a valve fails the test a WR&A is issued. Each WR&A is planned by the Maintenance Planning group who determine if a post maintenance test is required and the appropriate procedure. The retest is tracked by the test procedure specified on the WR&A. In addition a Post Maintenance Testing Requirements (PMTR) sheet is now generated with each work request which specifies the retest and requires sign off that testing is successfully completed.

The inspector tracked the failure of M-57, purge valves, on May 2, 1988, and determined that the process had been correctly implemented. The inspector concluded that the licensee has controls in effect which provide adequate assurance that retest of leakage barriers is identified, performed and reviewed. A larger data base will be reviewed in the routine inspection program at a future time.

4. Verification of Containment Integrity (61715)

The adequacy and implementation of the licensee's program designed to ensure and maintain containment integrity was assessed by reviewing: the adequacy of surveillance test procedures; surveillance test records; post-maintenance activities associated with surveillance tests; and Quality Assurance involvement in containment related activities.

a. Procedures Reviewed

- OST-1029, Revision 2, Containment Penetration Outside Isolation Valve Verification, (Frequency: Monthly)
- OST-1069, Revision 1, Containment Building Penetration Inside Manual Isolation Valve Verification, (Frequency: Usually 92 Days)
- EST-219, Revision 3, Personnel Air Lock Door Seals Local Leak Test, (Frequency: Usually 72 hours after containment entry)
- EST-222, Revision 0, Procedure for the Type B LLRT of the Personnel Air Lock Barrel (Overall Test), (Frequency: 6 Months)
- OST-1021, Revision 4, Operations Surveillance Log, (Frequency: Daily)
- OST-1009, Revision 3, Containment Spray Operability Monthly Interval, (Frequency: Monthly)
- OST-1119, Revision 3, Containment Spray Operability Quarterly Interval, (Frequency: Monthly)
- OST-1807, Revision 2, Containment Spray System: ESF Response Time, (Frequency: 18 Months)
- OST-1809, Revision 2, Switchover to Recirculation Sumps: ESF Response Time, (Frequency: 18 Months)
- EST-220, Revision 0, Type C LLRT of Containment Purge Exhaust Penetration (M-58), (Frequency: Quarterly)
- EST-221, Revision 0, Type C LLRT of Containment Purge Make-up Penetration (M-57), (Frequency: Quarterly)
- RST-206, Revision 3, Spray Additive System Sodium Hydroxide Concentration Surveillance, (Frequency: 6 Months)
- OST-1825, Revision 3, Safety Injection: ESF Response Time, Train A, (Frequency: 18 Months)



- OST-1826, Revision 3, Safety Injection: ESF Response Time, Train B, (Frequency: 18 Months)
- OST-1010, Revision 2, Containment Cooling System Operability Test, (Frequency: Monthly)
- MST-I0116, Revision 1, Containment Hydrogen Analyzer System Calibration, Train A or B, (Frequency: Quarterly)
- MST-I0234, Revision 1, Containment Hydrogen Monitor Operational Test, (Frequency: Monthly)
- MST-I0211, Revision 0, Electric Hydrogen Recombiner Kilowatt Indication Channel Calibration, A or B, (Frequency: 18 Months)
- OST-1030, Revision 3, Electric Hydrogen Recombiner Functional Test, (Frequency: 6 Months)

b. Scope of Procedure and Record Review

The inspectors reviewed the above surveillance procedures either totally or partially to verify their technical and administrative adequacy. The procedures were reviewed to verify applicable technical specification requirements were met, adequate information and instruction were provided, and adequate acceptance criteria and limits were specified.

The inspectors also reviewed test records of the above surveillance tests to ascertain the availability of these systems. Those containment systems involved in this review included the following areas:

- Containment isolation valve alignment checks, stroke time and operability tests (abbreviated as CIV)
- Containment personnel airlocks (abbreviated as CA)
- Containment internal pressure and temperature limits (abbreviated as CPT)
- Containment combustible gas monitoring system (abbreviated as CCGM)
- Containment depressurization system - containment spray (abbreviated as CDS-CS)
- Containment depressurization system - containment spray additive (abbreviated as CDS-CSA)
- Containment depressurization system - containment cooling (abbreviated as CDS-CC)
- Containment ventilation system (abbreviated as CV)

The following records associated with the previously mentioned containment related and post-LOCA mitigation systems were reviewed by the inspectors. Also shown is the applicable Technical Specification which required the surveillance test.

<u>Containment System</u>	<u>Procedure No.</u>	<u>Records Reviewed</u>	<u>T.S.</u>
CIV	OST-1029	01/04/88 through 07/05/88	4.6.1.1.a
CIV	OST-1069	09/21/87 and 10/26/87	4.6.1.1.a
CIV	OST-1825	10/29/87	4.6.3.2.a 4.6.3.2.c 4.6.3.2.d 4.6.3.2.f
CIV	OST-1826	11/13/86 through 12/15/86	4.6.3.2.a 4.6.3.2.c 4.6.3.2.d 4.6.3.2.f
CA	OST-219	01/21/87 through 06/27/88	4.6.1.3.a
CA	OST-222	10/31/87 through 05/05/88	4.6.1.3.b.1 4.6.1.3.b.2
CPT and CCGM	OST-1021	06/01/88 through 06/30/88	4.6.1.4 4.6.1.5 4.6.4.1.a 4.6.4.1.b
CDS-CS	OST-1009	02/02/88 through 06/05/88	4.6.2.1.a 4.6.2.2.a
CDS-CS	OST-1119	09/17/87 through 04/06/88	4.6.2.1.a 4.6.2.1.b
CDS-CS and CDS-CSA	OST-1807	10/14/86 through 10/26/87	4.6.2.1.c.1 4.6.2.1.c.2 4.6.2.2.c
CDS-CS	OST-1809	12/10/86	4.6.2.1.c.3
CDS-CSA	OST-206	12/03/87 through 06/07/88	4.6.2.2.b.2
CDS-CC	OST-1010	12/03/87 through 05/05/88	4.6.2.3.a.1 4.6.2.3.a.2
CCGM	MST-I0116	10/02/87 through 05/19/88	4.6.4.1
CCGM	MST-I0234	02/15/88 through 06/08/88	4.6.4.1.a 4.6.4.1.b
CCGM	MST-I0211	06/01/88	4.6.4.2.b.1
CCGM	OST-1030	12/26/86 through 01/04/88	4.6.4.2.a
CV	EST-220	06/15/88	4.6.1.7.2
CV	EST-221	05/03/88	4.6.1.7.2

c. Findings Summary

For the most part, the procedures reviewed were technically accurate and in conformance with Technical Specifications (TS), however, during the inspectors' review of Procedure No. EST-219, Personnel Airlock Door Seals Local Leak Rate Test, several discrepancies and



weaknesses were noted relating to the procedure or test performance as follows.

1. Item 1.2 in the purpose section of the procedure stated that the leak rate test will be performed within 72 hours after each closing or once per 72 hours during multiple entries in Plant Modes 1-4. Paragraph III.D.2.b.iii of 10 CFR 50, Appendix J states that airlocks opened during periods when containment integrity is required by the plant's TSs (Modes 1-4) shall be tested within 3 days after being opened. The inspectors made licensee management aware of this discrepancy and cautioned against using the airlock closing time as opposed to the opening time for the start of the 72 hour test requirement. Similarly, the inspectors discussed with the licensee about the same discrepancy which exists between the closing versus opening wording of TS surveillance requirement 4.6.1.3.a and 10 CFR 50, Appendix J. The inspectors indicated that in most instances where there exists a conflict between requirements, the more conservative requirement takes precedence, i.e., the Code of Federal Regulations in this circumstance.
2. The licensee's Inservice Inspection (ISI) Engineer responsible for performing the airlock seal tests (TS 4.6.1.3.a) stated that these surveillance tests were being performed with the assumption that the provisions of TS 4.0.2 were applicable. TS 4.0.2 specifies an allowable 25% extension of the surveillance interval for TS surveillance requirements. The licensee's reason for this assumption was that TS 4.6.1.3.a does not explicitly state that the provisions of TS 4.0.2 were not applicable. The inspectors reminded the licensee that 10 CFR 50, Appendix J Paragraph III.D.2.b.iii requires a 72 hour test interval and the TS extension does not apply to the CFR. At the NRC Exit Interview, the licensee committed to adhere to the 72 hour test interval.
3. A weakness was also found in the licensee's controls for triggering the performance of the seal tests. The licensee's representative stated that presently the tests are performed every monday of the week, and that ISI contacts the control room every wednesday and friday of the week to check if containment entries have been made. The inspectors considered this to be a weak triggering mechanism since there exist no procedures or other administrative controls which require ISI to take this action. At the Exit Interview, the licensee committed to establish appropriate test triggering controls whereby plant operations would be responsible for contacting ISI when containment entries are made. Further, the inspectors were provided with a copy of a revised Control Room Standing Order, which requires the control room operators to contact ISI when entry is made and to enter their initials and date ISI contacted in the Containment Entry Log.

The inspectors' review of surveillance test records identified no discrepancies. The inspectors verified that the surveillance tests were performed at the required frequencies; that test results met acceptance criteria; that appropriate retests or other post-maintenance activities were prescribed as required for failed tests; and that appropriate sign-offs, test reviews, and test concurrences were performed. These findings indicated that required plant programs designed to ensure containment integrity and containment systems designed to mitigate contamination releases in the event of containment integrity failure following a LOCA are in a relatively high state of availability. However, this conclusion was based on limited available plant data since the plant has operated for only one and one-half years and has not had a refueling outage.

d. Post-Maintenance Activities

The inspectors reviewed a small sample of maintenance records associated with local leak rate surveillance test activities. The objective of this review was to verify that test failures and deficiencies were promptly corrected and that appropriate retests or other functional test requirements were performed. The inspectors found that in all cases reviewed, post-maintenance testing was completed as required and in a timely manner. No unacceptable conditions were identified.

5. Exit Interview

The inspection scope and results were summarized on July 29, 1988, with those persons indicated in Paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results. Proprietary information is not contained in this report.

